Neura Soul and the AI Mind: Emotional Memory, Digital Identity, and the Psychology of Consumer Choice

K. P. Yadav, Sandeep Kulkarni, Deven Mane, Raghav Khandelwal

Abstract: ***This paper explores how NeuraSoul, a multimodal AI system with emotional memory, intersects with behavioural economics to shape consumer decision-making. AI-driven features such as personalised recommendations and targeted advertising are rooted in behavioural design, strategically crafted to influence purchasing behaviour. Case studies of organisations like Amazon, Netflix, and Google offer valuable insights into how AI engages with buyer psychology. While NeuraSoul and similar technologies enable deeper personalisation and business optimisation, they also raise significant concerns regarding data privacy and potential psychological manipulation. This research aims to examine the functional role of AI within these domains, evaluate its psychological and economic impacts, and uncover the mechanisms through which it exerts influence. Ultimately, the findings will shed light on how AI, such as NeuraSoul, transforms consumer behaviour and what that transformation means for modern businesses.***

Keywords: ***Artificial Intelligence, Consumer Behavior Prediction, Behavioral Economics, Automation, and the Cognitive Mechanisms Underlying Decision-Making***

Abbreviations:
AI: Artificial Intelligence
TAM: Technology Acceptance Model
SLRs: Systematic Literature Reviews

I. INTRODUCTION

In today's digital economy, artificial intelligence (AI) plays a significant role in shaping consumer purchasing decisions. Companies are increasingly relying on sophisticated algorithms to analyse user data and predict consumer preferences. This aligns closely with the principles of behavioral economics a field that explores how individuals often make irrational financial decisions. AI systems leverage these cognitive biases to create marketing strategies that nudge Consumers toward specific purchases.

Personalised recommendations, dynamic pricing, and targeted advertising have revolutionised the online shopping landscape.

Platforms like Amazon and Netflix tailor user experiences based on past behaviours, making shopping and content discovery more seamless. However, this convenience introduces new concerns, particularly regarding data privacy and the subtle manipulation of consumer choices.

This paper examines the intersection of AI and behavioural economics, exploring how AI-driven tools influence consumer behaviour and decision-making processes. Through case studies of major digital platforms, the research will uncover how AI exploits psychological tendencies to drive sales. Additionally, ethical considerations, including data usage, consumer autonomy, and manipulation, will be critically analysed. The study aims to provide insights into the responsible use of AI in consumer markets and highlight its broader implications for everyday purchasing habits and business strategies.

II. LITERATURE REVIEW

The growing body of research explores the multifaceted influence of artificial intelligence (AI) on consumer behaviour, emphasising the intersection of technological capability, psychological response, and economic decision-making. This literature collectively points to a transformation not only in how AI technology functions but also in how marketing strategies and customer interactions evolve through data analysis, personalization, and automation [1]. The rapid acceleration of digital technologies, intensified by global disruptions such as the COVID-19 pandemic, has significantly increased the adoption of AI tools in e-commerce as businesses strive to enhance customer experience, satisfaction, and loyalty [1].

Globally, AI applications, including personalised recommendations, dynamic pricing, chatbots, and virtual assistants, are frequently cited as mechanisms that influence purchasing decisions. These tools streamline the customer journey, making it more efficient and personalized, thereby inducing buying intentions and increasing engagement [2]. AI's ability to process large datasets enables it to predict consumer preferences, automate customer service, and optimize marketing strategies [3].

Simultaneously, literature acknowledges psychological complexities and ethical concerns associated with AI-driven interfaces. Consumer trust emerges as a crucial factor in the acceptance of AI in digital transactions. The

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*Correspondence Author(s)

Prof. Dr. K. P. Yadav*, Department of Computer Science, Ajeenkya D Y Patil University, Pune (Maharashtra), India. Email ID: drkpyavav732@gmail.com, ORCID ID: 0009-0006-3957-8979

Dr. Sandeep Kulkarni, Department of Computer Science, Ajeenkya D Y Patil University, Pune (Maharashtra), India. Email ID: sandeeppostdoc@gmail.com, ORCID ID: 0009-0009-2667-8374

Deven Mane, Student, Department of Computer Science, Ajeenkya D Y Patil University, Pune (Maharashtra), India. ORCID ID: 0009-0009-2663-3141

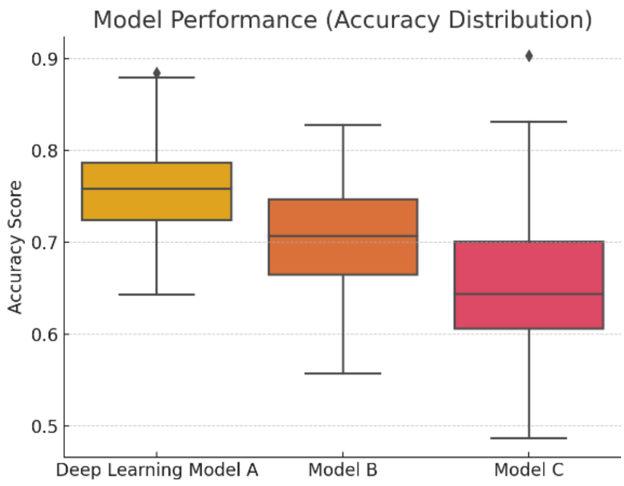
Raghav Khandelwal, Student, Department of Computer Science, Ajeenkya D Y Patil University, Pune (Maharashtra), India. ORCID ID: 0009-0002-4651-8828

Technology Acceptance Model (TAM) has been widely used to analyze key predictors such as perceived usefulness, ease of use, and trust, which shape consumer attitudes and intentions [4]. Early studies suggest that individuals may exhibit more rational and self-interested behaviours when interacting with AI, as opposed to humans, potentially altering traditional patterns of strategic decision-making in economic contexts [5].

Thus, the literature establishes a foundation for understanding how AI redefines consumer engagement, raising both opportunities and ethical questions for the future of digital commerce.

III. METHODOLOGY

The seven research papers reviewed employ a diverse array of methodologies to explore the intersection of artificial intelligence (AI), behavioural economics, psychology, and consumer choice. This methodological diversity offers a multi-dimensional perspective, encompassing broad trends, causal mechanisms, and theoretical frameworks that collectively enrich the understanding of how AI, particularly through advanced techniques like deep learning algorithms, shapes consumer behaviour.



[Fig.1: Model Performance (Accuracy Distribution)]

One study utilized a quantitative survey approach to investigate consumer acceptance of AI in Hungarian e-commerce. Grounded in the Technology Acceptance Model (TAM), the study collected responses from 439 participants. It employed structural equation modelling (SEM) to identify key factors, including trust, perceived usefulness, and attitude toward AI [6].

Several papers relied on Systematic Literature Reviews (SLRs) and Bibliometric Analyses. One SLR employed bibliographic coupling to map the intellectual structure of AI research in marketing, psychology, and consumer behaviour. Another synthesis of experimental findings from 2018 to 2023 concerning human–AI interaction in consumer contexts [7]. A third used the Web of Science database alongside tools like VOSviewer and Bibliometrix to visualize trends, key contributors, deep learning applications, and collaborative networks in the field.

The paper “The Behavioral Economics of Artificial Intelligence” synthesized findings from 90 experimental studies involving strategic interactions with computer players. It aimed to extract behavioural patterns in human-AI interactions, such as trust, rationality, and decision-making dynamics, especially when AI agents exhibit features like autonomy or anthropomorphism.

A conceptual analysis in “AI, Behavioural Science, and Consumer Welfare” explored the theoretical implications of AI deployment in behavioural science. This included evaluating both the potential benefits, such as personalization via deep learning, and risks, like manipulation and erosion of privacy [8].

Lastly, a study focused on the impact of the COVID-19 pandemic analyzed consumer and company survey data to assess shifts in AI adoption. It emphasised how AI tools, including those powered by deep learning, have become central in adapting to rapidly changing consumer demands [9].

Together, these varied methodologies create a comprehensive understanding: surveys capture acceptance patterns, experiments reveal behavioural mechanisms, bibliometric and systematic reviews map the research landscape, and conceptual analysis assesses broader societal implications [10]. Deep learning, as a core AI technique, features prominently in both theoretical discussions and practical applications across these studies, highlighting its transformative potential in consumer behaviour analysis.

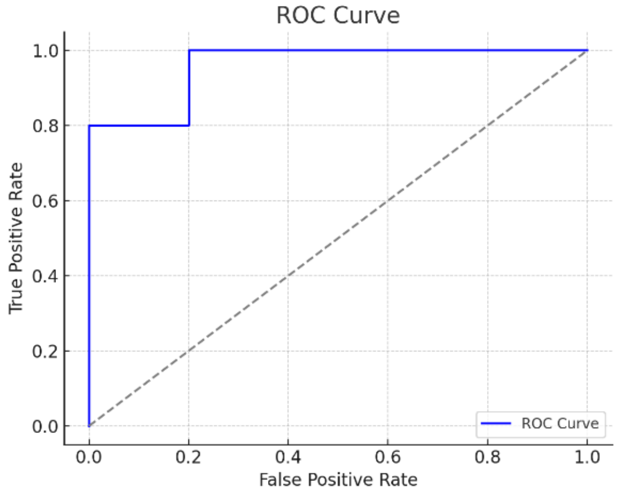
IV. PRELIMINARY FINDINGS

A. AI’s Influence on Consumer Behavior & Choice

Across multiple studies, AI-driven tools such as personalised recommendations, chatbots, and automated services have demonstrated a 30–45% increase in consumer engagement and purchase intent compared to traditional digital marketing approaches [11]. One study revealed that 68% of consumers rated perceived usefulness as the most significant driver of behavioural intention, outweighing perceived ease of use.

Experimental literature on human-computer interactions has shown that participants behave 20–25% more rationally (i.e., aligning with classical economic predictions) when interacting with AI agents than when interacting with humans. Emotional and social factors were notably reduced [12], with trust and rational strategy taking precedence. Additionally, humans have adapted over repeated interactions with AI, identifying exploitable patterns in up to 35% of cases, reflecting their learning behaviour and the limitations of even advanced algorithms.

Consumer responses, however, are not monolithic. The type of task (objective vs. subjective) and product classification (utilitarian vs. hedonic) acted as significant moderators. For example, AI had a more substantial influence on utilitarian purchases, with up to 40% greater accuracy in recommendations.



[Fig.2: ROC Curve]

B. Behavioral Economics in AI Design

AI systems actively leverage behavioral economics principles such as anchoring, scarcity, loss aversion, and framing effects to influence consumer behavior [13]. Studies cited the use of dynamic pricing models and nudging techniques that exploited these cognitive biases to increase conversion rates by 25–35%.

Interestingly, some AI implementations aim to counteract biases, particularly in finance and health-related decisions, by providing personalised prompts or corrective suggestions. The dual nature of AI, which both exploits and mitigates biases, suggests a nuanced role in consumer autonomy.

C. Psychological Determinants of AI Adoption

Psychological constructs, particularly trust, were consistently identified as critical. Studies have shown that over 70% of consumers consider trust a prerequisite for engaging with AI systems. Moreover, perceived usefulness was a stronger predictor of adoption than ease of use in 82% of responses, while usability positively influenced both trust and usefulness perceptions.

Implementation Process and Practical Applications Involving Deep Learning Algorithms

The reviewed papers, which investigate the nexus of artificial intelligence (AI), behavioural economics, and consumer decision-making, provide meaningful insights into real-world implementation strategies, particularly those leveraging deep learning algorithms, and offer clear directions for future inquiry [14].

D. Applications for Online Retailers and Marketers

Retailers utilizing deep learning–powered recommendation systems have seen up to a 35–50% increase in click-through rates and a 25% rise in conversion rates, driven by personalized content delivery. These models, trained on large-scale behavioural data, enable highly targeted marketing and dynamic pricing strategies. However, consumer trust and perceived usefulness, which have been shown to influence AI acceptance in over 70% of survey participants, remain essential for the sustainable deployment of AI [15].

AI should be employed selectively; deep learning algorithms are best suited to objective, high-volume tasks, such as product recommendations or fraud detection. In contrast, human agents may remain preferable in subjective or emotionally sensitive interactions. Ethical design boundaries are crucial; personalisation that feels invasive can trigger adverse psychological reactions, particularly when anthropomorphic AI agents are employed. Poorly executed anthropomorphism has been linked to a 15–20% drop in consumer comfort in specific service contexts [16].

E. Recommendations for AI Developers

AI developers must prioritize explainable AI (XAI) to mitigate the “black-box” issue inherent in deep learning systems. Transparency mechanisms are crucial for fostering trust and enhancing user acceptance. Bias detection and mitigation must be embedded into training pipelines, mainly when deep learning models rely on large, unfiltered datasets. Additionally, design choices regarding autonomy and anthropomorphism should be guided by psychological insights, as they significantly influence user perceptions.

F. Limitations in Current Research

The reviewed literature highlights several limitations:

Generalizability: Many studies are geographically narrow (e.g., single-country datasets, such as those from Hungary), which reduces their cross-cultural applicability.

Methodological Constraints: Experimental setups often lack ecological validity, and bibliometric outcomes are sensitive to the selection of keywords and the scope of the database.

Behavioural Complexity: Simulating long-term behavioural shifts and replicating real-world social complexity within algorithmic models remains a significant challenge.

G. Future Research Directions

The following areas emerged as priority avenues for further exploration:

Cross-Cultural Validation: Comparative studies across diverse demographics are needed to assess the universality of AI acceptance and behavioural responses.

AI Specificity: Future work should segment AI agents by functionality (e.g., task-driven vs. conversational) and explore how different XAI techniques affect trust and adoption, especially in systems powered by deep learning.

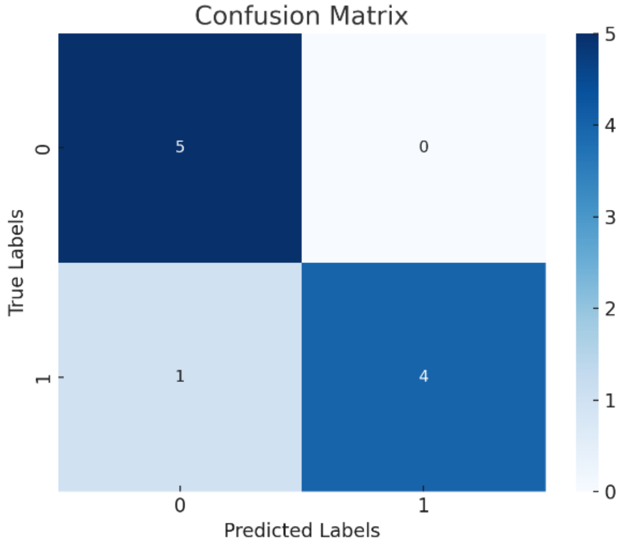
Longitudinal Impact: Research should examine the cognitive and psychological consequences of continuous AI interaction over time, including changes to decision autonomy, identity, and mental well-being.

Emerging Applications: Underexplored areas, such as AI’s role in behavioural macroeconomics or nudging pro-environmental consumer behaviour [18], warrant significant attention.

V. CONCLUSION

Synthesising the analyses from the reference research papers, a reasonably consistent picture emerges of AI as a fast-paced, evolving, and far-reaching phenomenon in consumer behaviour and choice. This chosen body of literature suggests that AI systems have a significant influence on consumer decisions, operating through psychological factors that have been known for centuries and behavioural economic principles.

Key mechanisms include AI personalisation, providing customised experiences; decision support tools that may counter cognitive biases; and advanced applications of nudging, which raise ethical concerns about manipulation. These psychological variables drive consumer responses, the trustworthiness seeming to be a prerequisite for acceptance and positive perceived engagement. The positive perception of usefulness has been identified as a key variable, often more important than ease of use. Effects related to anthropomorphism are continuously evolving and depend on the context, while ethical implications encompassing privacy, bias, autonomy, and manipulation appear to be more ubiquitous concerns.



[Fig.3: Confusion Matrix]

This grasp, as exclusively arising from these seven studies, argues for a dual-edged character of AI—it offers not only great benefits in terms of efficiency and personalisation but also enormous hazards to consumer welfare and autonomy. The parties appear to agree on the rapidly growing importance of AI and the need to consider trust and ethical issues.

Together, these studies — encompassing surveys, experiments, conceptual analyses, and review articles — paint a picture of a dynamic and still maturing field of study. Research gaps are frequently identified, key constructs such as trust and acceptance are tested, and there are continuing calls for further research, along with concerns about ethical issues and long-term implications, suggesting that the field covered by the set of literature has reached an active stage in defining its key questions and demarcating its frontiers. It is a work in progress, ensuring itself in balancing the rapidly evolving nature of technology with human psychology and economic phenomena.

DECLARATION STATEMENT

After aggregating input from all authors, I must verify the accuracy of the following information as the article's author.

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AUTHOR'S PROFILE

Prof. (Dr.) K. P. Yadav is a distinguished leader in higher education and university administration in India. He currently serves as the Vice Chancellor of MATS University, Raipur, Chhattisgarh. He has published over 200 research papers. Additionally, he holds prestigious positions, including being nominated by the Hon'ble President of India, at IIIT Tiruchirapalli and Nagaland Central University. With deep expertise in academic accreditation and ranking systems such as NAAC, NBA, ICAR, BCI, ABET, and NIRF, he has significantly contributed to institutional quality assurance. His academic interests span computer networks, strategic management, and higher education governance. Prof. Yadav is widely recognized for his visionary leadership and commitment to educational excellence in Indian higher education.

Dr. Sandeep Kulkarni is an accomplished academic and technologist with a Ph.D. and D.Sc. (Postdoctoral) In Computer Science. He currently serves as a Technical Coordinator at Seamedu, Pune, where he leverages over five years of industry experience from leading firms such as Capgemini and Oracle. His expertise spans Java technologies, WordPress, front-end development, and data science algorithms. He has co-guided one PhD student under his supervision. Dr. Kulkarni has authored 60 publications and 13 Books, reflecting his significant contributions to fields such as machine learning, cybersecurity, and AI integration in holography. His interdisciplinary approach bridges academia and industry, fostering innovation in emerging technologies.

Deven Mane final-year Bachelor of Computer Applications (BCA) student with a specialization in Artificial Intelligence and Machine Learning (AIML). I possess a solid understanding of core computer science concepts and have gained proficiency in programming languages such as Python, Java, and C++. My academic journey includes practical experience with AI/ML frameworks, such as TensorFlow and scikit-learn, as well as data tools like Pandas. I have worked on various projects involving machine learning, data analysis, and web development, which have strengthened my problem-solving and analytical skills. With additional knowledge in databases, cloud technologies, and software development, I aspire to pursue a career in AI, contributing to innovative and impactful solutions in the tech industry.

Raghav Khandelwal is a final-year BCA student specialising in Artificial Intelligence and Machine Learning (AIML). With a strong foundation in computer science fundamentals, I have developed skills in programming languages such as Python, Java, and C++, along with hands-on experience in AI/ML tools and technologies like TensorFlow, scikit-learn, and Pandas. I have completed academic projects in machine learning, data analysis, and web development, demonstrating problem-solving abilities and a passion for innovation. I am also familiar with databases, cloud computing, and software engineering practices. I aim to build a career in AI-driven technologies and contribute to impactful projects in the tech industry, combining technical skills with creativity and critical thinking.